

IN THE CLAIMS:

The listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently amended) A method of forming sidewall spacers adjacent opposing vertical sides of a gate electrode, comprising:
forming at least one gate electrode over a substrate;
forming, at a first temperature in a range of approximately 550°C to 580°C and a first pressure of about 10 mTorr, a first silicon oxide film conformally over the substrate and gate electrode from a combination of gases including bis-(tertiarybutylamino)silane and oxygen;
forming, at a second temperature in a range of 580°C to less than 600°C and a second pressure of about 65 Pascal, a silicon nitride film conformally over the first silicon oxide film from a combination of gases including bis-(tertiarybutylamino)silane for about 49 minutes; and
forming a second silicon oxide film over the silicon nitride film from a combination of gases including bis-(tertiarybutylamino)silane and oxygen; wherein the first temperature is less than the second temperature;
removing the second silicon oxide film to form an L-shaped spacer; and
implanting a dopant through the L-shaped spacer to form a region of intermediate dopant concentration and depth between a tip region and a source/drain region.
2. (Previously presented) The method of Claim 1, wherein said forming the first silicon oxide film comprises providing one or more wafers in a furnace at the first temperature and flowing BTBAS and oxygen into the furnace.
3. (Previously presented) The method of Claim 2, wherein said forming the silicon nitride film and the second silicon oxide film comprises keeping the one or more wafers in the furnace.
4. (Previously presented) The method of Claim 2, wherein said forming the silicon nitride film comprises maintaining the one or more wafers in the furnace at the second temperature and flowing BTBAS and NH₃ into the furnace.

5. (Previously presented) The method of Claim 4, wherein said forming the second oxide film comprises maintaining the one or more wafers in the furnace at the first temperature and flowing BTBAS and oxygen into the furnace.
6. (Canceled)
7. (Previously presented) The method of Claim 1, further comprising purging the furnace prior to forming the silicon nitride film and subsequent to forming the first oxide film.
8. (Previously presented) The method of Claim 7, wherein said purging the furnace comprises ceasing the flow of BTBAS and oxygen, and flowing N₂ into the furnace.
9. (Previously presented) The method of Claim 1, further comprising purging the furnace prior to forming the second oxide film and subsequent to forming the silicon nitride film.
10. (Previously presented) The method of Claim 9, wherein said purging the furnace comprises ceasing the flow of BTBAS and NH₃, and flowing N₂ into the furnace.
11. (Currently amended) A method of forming a transistor, comprising:
forming at least one gate electrode over a gate dielectric layer, the gate dielectric layer disposed on a substrate;
depositing a first silicon oxide film conformally over the substrate and gate electrode from a combination of gases comprising bis-(tertiarybutylamino)silane and oxygen at a first temperature of between approximately 550°C and 580°C and a pressure of about 10 mTorr;
depositing a silicon nitride film conformally over the first silicon oxide film from a combination of gases comprising bis-(tertiarybutylamino)silane and ammonia at a second temperature of between 580°C and less than 600°C and a second pressure of about 65 Pascal for about 49 minutes;
depositing a second silicon oxide film over the silicon nitride film from a combination of gases comprising bis-(tertiarybutylamino)silane and oxygen; and

forming a first sidewall spacer; wherein the first temperature is less than the second temperature;

removing the second silicon oxide film to form an L-shaped spacer; and
implanting a dopant through the L-shaped spacer to form a region of intermediate dopant concentration and depth between a tip region and a deep source/drain region.

12. (Original) The method of Claim 11, wherein the first silicon oxide, the silicon nitride, and the second silicon oxide are deposited in-situ.

13. (Original) The method of Claim 11, wherein depositing the first silicon oxide, the silicon nitride, and the second silicon oxide are all done in a first furnace.

14. (Previously presented) The method of Claim 11, wherein the furnace is a vertically oriented furnace and the BTBAS, the oxygen, the nitrogen, and the ammonia each flow into the furnace from a bottom of the furnace.

15. (Currently amended) The method of Claim 11, further comprising implanting dopants to form a the deep source/drain region in the substrate adjacent at least two opposing sides of the gate electrode.

16. (Previously presented) The method of Claim 14, wherein said forming the first sidewall spacer comprises anisotropically etching the second silicon oxide layer, the silicon nitride layer, and the first silicon oxide layer.

17. (Canceled)

18. (Currently amended) The method of Claim 17, further comprising implanting dopants to form a the deep source/drain region in the substrate, adjacent to each opposing side of the L-shaped spacer.

19. (Previously presented) The method of Claim 18, wherein said implanting dopants includes a partial passage of ions from an ion beam through a portion of the L-shaped spacer.

20 – 23. (Canceled)